IC5.4: Optional Job Sheet

Examples of Frontal Precipitation Bands

Objective: To apply the diagnostics shown in the IC 5 Lesson 4 training module to a winter weather event.

Data: 24 November 2004 winter storm event in the Midwest. You will be using your WES machine in case review mode.

Instructions:
On your WES machine, load the 24 November 2004 case, ILX localization, and set the clock to 24 November 2004, 01:00 UTC. **You will be looking at the 12 hr forecast from the 00Z 24 Nov 2004 run of the NAM 80 across Illinois valid 12Z 24 Nov 2004**.

On the regional scale, load a plan view of NAM 80 500-400mb layer Q vector divergence and Q vectors, height, and potential temperature.

Question 1. Where is the Q-vector convergence strongest at the 12 hr forecast valid 12 UTC on 24 November?

Question 2. Step forward 6 hrs to the 18 UTC forecast. At this time where is the upper level Q-vector convergence strongest?

Load a plan view of NAM 80 700, 850 mb 2-D frontogenesis and 700, 850 mb omega.

Question 3. Where is the low to mid level forcing due to frontogenesis strongest at the forecast valid at 12 UTC? How about the forecast 18 UTC on 24 November?

Question 4. Is the low- to mid-level forcing collocated with the upper tropospheric forcing at 12 UTC and/or 18 UTC? (Circle the appropriate one(s))

12 UTC 24 November Forecast: **YES/NO**

18 UTC 24 November Forecast: **YES/NO**

Take a cross section perpendicular to the maximum in frontogenesis across Illinois and **examine the forecast valid at 18 UTC on 24 Nov 2004**. Load NAM 80 omega, 2-D frontogenesis, RH, and saturated geostrophic equivalent potential vorticity.

Question 5. Do you expect any convection across Illinois, either via conditional instability or slantwise instability?

Question 6. Describe all the different forcing mechanisms that may be in play to result in the > 20 µb/sec rising motion over central Illinois.

An answer key is available for this job sheet. Please see your local AWOC Winter Weather facilitator to obtain a copy.